



STEPH PARKYN

# MANGANESE

Element Symbol: **Mn**

Atomic Number: **25**

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# MANGANESE

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Manganese is a silvery-grey metallic element, found as a free element in nature; in fact being the 12th most abundant element in the Earth's crust. Being easily obtainable, it finds many uses in industry, most notably in the production of metal alloys, such as stainless steel. Although a relatively little-known element, it is in fact the fourth most used metal in terms of tonnage.

The credit for the discovery of manganese can be attributed to Swedish chemist Johan Gottlieb Gahn, in 1774. Chemists had started to suspect that the compound manganese dioxide (which had been known about for a very long time) contained a new element, but it wasn't until Gahn that manganese was successfully isolated, by reducing the oxidised form with common carbon.

The origin of the name 'manganese' is both interesting and complex. In ancient times, a pair of black minerals from Magnesia, Greece was considered a 'couple'; one female, and one male. The female, eventually named Magnesia, was unique in that she didn't seem to exhibit the magnetic properties that the male did (the male today is realised to be magnetite). This magnesia came from two ores; magnesia negra, a black ore, and magnesia alba, a white one. Eventually, glassmakers and alchemists shortened 'magnesia negra' simply to Manganesa, for clarity. Once the metal was inevitably isolated, the distinct name became just manganese.

Manganese is vital to life; being an essential trace element for most species. Many enzymes in the human body cannot function without it. As well, it is an integral component of plant photosynthesis. And, on a less scientific front, manganese compounds have uses dating back to the Stone Ages; the distinct and exquisite colour of the oxides were used as pigments in ancient paintings. Even today it is still used in glassmaking, with the favourable colours being used to produce striking glass tints.

Australia is surprisingly manganese-rich; outputting approximately 8% of the world's total content, and with reserve supplies easily topping this. To this point, there is no substitute for manganese in its industrial context; without it, many alloys (namely steel, in which 90% of the manganese consumed in the world ends up) would simply cease to exist.

*Provided by the element sponsor Sarah Lau*

## ARTISTS DESCRIPTION

The first connection between chemistry and art traces back to Paleolithic times when mineral pigments were used in rock paintings. The most common rock art element found around the world is the human hand. The black colour was made by our ancestors using manganese dioxide. Dry point and stencil.

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